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Amendments to the Specification

Please amend the paragraph bridging pages 1 and 2, in the following manner:

To obtain the output color space using the above method, it is required to create an appropriate printer profile. To create a printer profile, it is necessary to perform colorimetric processing by outputting a color chart including an extremely larger number of color patches than that of a target printer. As a result, the operation of creating the printer profile produces quite ~~an overload~~ load on processing resources.

Please amend the paragraph at page 5, lines 24-25, in the following manner:

Fig. 5 is a block diagram of an image forming apparatus according to [[an]] a modification of the embodiment; and

Please amend the paragraph at page 6, lines 20-24, in the following manner:

The feature amount converting unit 12 stores a first LUT 202 (Fig. 2A) in advance. The arithmetic unit 10 compares previously measured values of a color chart in the history storage unit 11 with newly measured values of a color chart, and determines a number of color patches from the result of comparison.

Please amend the paragraph bridging pages 6 and 7, in the following manner:

The history storage unit 11 stores previously measured color patch values (L, a, b) 201 (Fig. 2A) in Lab coordinates ~~coordinate of the past color patches~~ and vector values 203 (Fig. 2A) which are obtained by compressing the three-dimensional Lab values 201 to one-dimensional values. This unit 11 corresponds to, for example, a hard disk drive (HDD) and a nonvolatile memory.

Please amend the paragraph at page 7, lines 9-10 in the following manner:

The operating system (OS) 16 is, for example, Microsoft ~~Windows~~

WINDOWS®, UNIX®, and ~~Linux~~ LINUX®.

Please amend the paragraph bridging pages 7 and 8, in the following manner:

Further, the program for generating the C language program may be stored on a computer connected to a network such as the Internet to be provided by allowing another computer to download it through the network. Alternatively, the program for generating the C language program may be provided or distributed through the network.

Please amend the paragraph at page 8, lines 15-18, in the following manner:

The application 7 is, for example, a word processor or an application for performing spreadsheet calculation, and sends data such as a document created by the application 7 to the printer driver 8 using ~~printing~~ a print command.

Please amend the paragraph at page 9, line 4, in the following manner:

The OS 9 is, for example, Microsoft ~~Windows~~ WINDOWS®, UNIX®, and ~~Linux~~ LINUX®.

Please amend the paragraph bridging pages 9 and 10, in the following manner:

Fig. 2A and Fig. 2B illustrate how to create data to be stored in the history storage unit 11 of the server 14. The history storage unit 11 stores previously measured color patch values (L, a, b) 201 in Lab coordinates ~~of the color patches of the past~~ as shown in Fig. 2A. The ~~measured values 201 of the past color patches~~ one-dimensionally compressed vector value 203 are obtained by performing arithmetic in the arithmetic unit 10 on three-dimensional Lab values 201 ~~as one-dimensionally compressed vector value 203 in the arithmetic unit 10~~ using the first LUT 202 in the feature amount converting unit 12, and the vector value is stored in the history storage unit 11. The first LUT 202 is a table prepared in advance, and is set as a reference, and therefore, this table is not possibly rewritten. The vector value 203 is used for determining Lab values at the time of creating patches.

Please amend the paragraph at page 10, lines 6-14, in the following manner:

If a vector is quantized to compress vector information, the number [[B]] of representative vectors becomes 2^c where c is a division number of space (a number of hierarchies in binary trees). A one-dimensional vector code value $2^{(c-1)}$ obtained by dividing the space by (c-1) times represents an average value of one-dimensional vector code values 2^{c-1} and 2^c in a low hierarchy (divided by c times). Therefore, if the one-dimensional vector code value $2^{(c-1)}$ expresses a blue type color, a vector code value in the low hierarchy expresses a bluish green type color or a bluish purple type color.

Please amend the paragraph bridging pages 10 and 11, in the following manner:

As shown in Fig. 2B, each distance (or color difference) between Lab values 211 obtained by measuring output color patches 210 and Lab values of reference white (e.g., paper white) of a medium for printing, is obtained. At this time, a distance 212 as ΔE76 ("ΔE76 distance") is calculated by the color difference formula according to the CIE1976Lab color system (CIE, Commission Internationale de L'Eclairage, International Commission on Illumination), and a distance 213 as ΔE94 ("ΔE94 distance") is calculated by the CIE1994 color difference formula. Further, a difference ("distance between color differences") 214 between the ΔE76 distance and the ΔE94 distance is obtained to allow detailed characteristics of a target color to be acquired in a numerical form. Subsequently, an N-dimensional input vector is converted to a one-dimensional vector value 216 using a second conversion table LUT 215 in the feature amount converting unit 12. At this time, the number N of dimensions of an input vector is 3 (N=3) if only the ΔE76 distance 212, the ΔE94 distance 213, and the distance 214 between the color differences are combined. Further, N=6 if the Lab measured values 211 are combined [[to]] the with ΔE76 distance 212, the ΔE94 distance 213, and the distance 214 between the color differences.

Please amend the paragraph at page 13, lines 7-14, in the following manner:

After extraction, an N-dimensional vector is converted to a one-dimensional vector based on any of the ~~second LUT 215~~ third LUTs 217a to 217m, and the one-dimensional vector is stored in the history storage unit 11. If no instruction is received from the user (step S4, No), the N-dimensional vector is converted to the one-dimensional vector for the ~~whole pieces of~~ entire data corresponding to the whole color regions constituting the most recently updated profile, based on the second LUT 215, and the one-dimensional vectors are stored in the history storage unit 11.

Please amend the paragraph bridging pages 13 and 14, in the following manner:

There are two stages for evaluation of patches created for the next color chart. At the first stage, an error ("A1") is compared with an error ("A2") (step S5). The error A1 is between the vector of the previously measured result and the vector of the newly measured result, and the error A2 is between the representative vector indicating an average value of measured values and the vector of the newly measured result. Specifically, A1 is the evaluation standard including short-term characteristics of the printer based on the ~~values measured last time and this time~~ last-measured values and the newly measured values, and A2 is the evaluation standard including long-term characteristics of the printer based on the average value of a large ~~amount~~ number of samples and the ~~value measured this time~~ newly measured value. If A1 is greater than or equal to A2 (step S5, No), the ~~result of~~ patch measurement ~~the time before~~ made just prior to the last measurement and the newly measured result is loaded from the history storage unit 11 to calculate a difference ("B1") between the result the time before last and the newly measured result, and the following equation is determined as the evaluation standard Ev (step S6),

$$Ev=\alpha A1+(1-\alpha)B1.$$

Please amend the paragraph at page 14 lines 20-25 in the following manner:

If the conditions of the color regions for the last ~~time and this time~~ and current measurements do not match (for example, ~~last time~~ during the last measurement, patches cover the whole color regions, ~~this time~~ and for the current measurement, patches cover only the representative color region), the current condition ~~for this time~~ is preferentially selected, and lack of data is covered by extracting the data from the history storage unit 11 to obtain the error.

Please amend the paragraphs at page 15, lines 1-24, in the following manner:

Only when Ev as the evaluation standard is greater than a threshold value θ1 for determination of patch output (Ev>θ1), the target Lab values are stored for patch creation (step S8). After the processing for determining the threshold value is finished, the Lab values for the patch creation are obtained by use of backward reference to the first LUT [[201]] 202 to change the Lab values according to an Ev value, patches are randomly created and arranged in a color chart, and then the color chart is output from the printer 2 ~~to measure again the patches~~ and the patches are measured again (step S8 → step S1). By randomly creating and arranging the patches in the above manner, the colors and the position of arranging the color patches can arbitrarily be changed, and the color patches created at the changed positions are measured. Therefore, any change of the color patches can be followed.

When the selection and arrangement of the color patches is ~~fixed like~~ predetermined as in the conventional technology, a change in a ~~position with no color patches~~ color which does not correspond to one of the predetermined patches cannot be followed. However, by performing such processing, the change becomes no longer a significant matter. It is noted that the position of forming the color patches is set on the side closer to the edge part of the photoreceptor if the Ev value is small, and is set on the side closer to the central part thereof if it is great. Consequently, the position of forming the color patches can be set according to the Ev value, and a combination of the setting of the position and the change in the number of color patches is highly adaptable to any of the changes.

Please amend the paragraph at page 17, line 22 in the following manner:

Further, by changing the number of color patches, arrangement of the patches is changed. Therefore, the position of forming the color patches is prevented from being fixed regardless of any applications, which makes it possible to adapt to ~~the change of~~ changes in the printer ~~with~~ over time.